



United States Department of the Interior

GEOLOGICAL SURVEY
EROS Data Center
Sioux Falls, South Dakota 57198

E84-10006
CR-174521

IN REPLY REFER TO

OAB6-87

"Made available under NASA sponsorship
in the interest of early and wide dis-
semination of Earth Resources Survey
Program information and without liability
for any use made hereof."

Memorandum

To: Technical Officer

From: Principal Investigator AN 31

Subject: Quarterly Report; Landsat 4 Investigations of Thematic Mapper
and Multispectral Scanner Applications (PCN902-91548; S-10757-C)

June 30, 1983



1) Problems

The foremost continuing problem is lack of timely data acquisition of our test sites. Well aware of reasons for this problem, we have shifted our effort to integration of retroactive TM orders into different application projects. Thus, we plan to meet the objectives of our proposal in spite of data acquisition problems.

2) Accomplishments

Data Production Branch personnel have continued their investigation into the quality and performance of Landsat 4 TM data. Doug Binnie of Engineering and Development has analyzed histograms of 50 TM scenes. He has computed the average mean brightness value for each band. In addition, he has determined the low and high brightness values with two sigma limits for the 50 scenes. A lookup table (LUT) was then designed to place the average mean brightness value at about 1.0 density on the straight line portion of the film's H & D curve. Black-and-white film and color composites were generated for three scenes (northeast Arkansas, Washington, and Salton Sea). The results are to be evaluated by Applications Scientists before proceeding.

Information on LUT's was received from GSFC the week of June 5. It is planned to produce the same three scenes using the GSFC proposed tables and consolidate the 7 LUT's, devised by Binnie, into three or four for all bands instead of a LUT for each band. These three sets of images, composited as bands 1, 2, and 3 and 2, 3, and 5, will be submitted to Applications Scientists to determine which of the combinations of LUT's produces the better image. As quickly as this is determined, a number of band combinations will be made for determining the best possible combinations.

Other application projects are in the initial stages with the Bureau of Indian Affairs for determining water sources and supplies on reservations, with the U. S. Geological Survey for determining rock types and lithologic structure, and with the Bureau of Land Management for assessing vegetation types.

(E84-10006) LANDSAT 4 INVESTIGATIONS OF
THEMATIC MAPPER AND MULTISPECTRAL SCANNER
APPLICATIONS Quarterly Report (EROS Data
Center, Sioux Falls, S. Dak.) 2 P
HC A02/MF A01

N84-12555

Unclas

CSCI 08B G3/43 00006

3) Significant Results

Manual interpretation of bands 5 and 7 have indicated these data sources to be excellent media for determining locations of dugouts and small ponds as water sources.

4) Publications

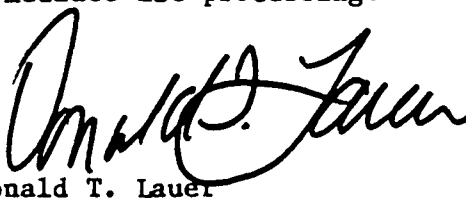
None this quarter.

5) Recommendations

None this quarter.

6) Data Utility

Band 5 of the scene (P30R29) was misregistered by four lines north/south. May have been caused by intermediate EDC processing.



Donald T. Lauer